The Occultation of Regulus, February 26, 1877.
By F. C. Penrose, Esq.

The occultation of Regulus, Feb. 26, 1877, was observed here.

	h	m	s	
Disappearance	12	46	14·8	} G.M.T.
Reappearance	13	51	5·6	

Two observers watched for the disappearance; one with a $2\frac{1}{4}$-inch O. G., the other with a $5\frac{1}{4}$-inch O. G. The clouds were sufficiently dense to obscure the star in the $2\frac{1}{4}$-inch before the occultation, but it was distinctly seen in the $5\frac{1}{4}$-inch on the dark limb. At the reappearance the sky was perfectly clear, and the star was seen as a bright indent upon the limb of the Moon.

Colebyfield, Wimbledon.

Latitude	51° 24′ 58″.
Longitude	0ʰ 0ᵐ 55ˢ·15.

Total Eclipse of the Moon, February 27, 1877.
By F. C. Penrose, Esq.

I offer a drawing made of the Total Eclipse of the Moon on the 27th ulto., at the phase of reappearance of the sunlight. It could not have failed to be remarked during totality, how very much brighter the northern and southern parts of the Moon's limb were than the eastern and western parts; presumably arising from some interference with the light refracted through the Earth's atmosphere, from a greater prevalence of clouds in the equatoreal regions than at the two poles. Some amount of *specular* reflection, at very flat angles, from the northern and southern ice, may have also aided in producing this effect.

With respect to the general phenomenon of the total lunar eclipse, I would observe that, although no value appears in works on Navigation to be placed on this phenomenon for the determination of longitude at sea, although I admit that this would be perfectly reasonable in the case of a partial eclipse; yet, when the eclipse is total, it seems quite capable of giving a useful result. The two phases of the beginning and end of totality should be observed when practicable, and the mean taken. By combining these observations in the total lunar eclipse of July 12, 1870, I obtained a G.M.T. differing from the prediction in the *Nautical Almanac* by 39ˢ, and from the eclipse of last February by 29ˢ, both being later than the prediction. There would be less difference than might be supposed in the use of smaller telescopes; for I found that simultaneous unaided eye observations of both phases made on the last occasion did not differ by many seconds. This could, after a little study, be allowed for; and probably, as far as the observation is concerned, the error need not exceed 15 or 20 seconds. The errors of the tables

would of course be shared by this with any other lunar method. The times I noted were,

	h	m	s	
Totality commenced	6	28	13	} G.M.T.
Totality ended	8	3	15	

The colour seen upon the Moon on this occasion, and especially the remarkable bluish hue which spread over the lunar regions preceding the reappearance of the sunlight, could not fail strongly to impress upon the mind the wish to realise in imagination the effect that would be seen from the Moon of the prismatic colours surrounding our planet, with the Sun's corona in the background and with *Venus* not far distant.

Total Eclipse of the Moon, February 27, 1877.
By the Rev. S. J. Perry.

The night was cloudless, but there was a sharp frost, which made the air unsteady. The Moon rose partially eclipsed. Using a power of about 100 with an 8-inch achromatic, the following contacts were observed :—

	h	m	s	
Commencement of Totality	6	27	24·5	G.M.T.
End of Totality	8	4	8·5	
Last contact with Shadow	9	0	6·0	

The time was taken with a Frodsham chronometer, compared during the eclipse with the standard sidereal clock; and clock stars were observed.

The darkness of that portion of the penumbra which was in close proximity to the umbra was so great, that the last contact was difficult to observe.

Several reappearances of occulted stars were seen during totality, and might have been well observed.

The thin circle of light on the Moon's limb was in such striking contrast with the cloudy dull brick-red shading of the centre, that to many persons it seemed as if the Moon was not completely immersed in the Earth's shadow.

Stonyhurst Observatory,
1877, February 28.

On Kepler's Problem. By M. A. de Gasparis.
(*Translation.*)

The numerical solution of the equation $M = E - e'' \sin E$ may be useful, especially for the new planets, for comets of elliptic orbit, and for the satellites of double stars, the number of which

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